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In their eagerness to help game through a tough period of winter, sportsmen have spent much energy and money, not realizing that they may be . . .

FEEDING DEER TO DEATH

By Robert H. Giles, Jr. and Ted McKinney

Reprinted from "National Wildlife" magazine—Dec.-Jan. issue 1968

Winter is a time of trial for many of the deer in North America. Wherever the temperature drops below freezing and snow covers the ground, their habits and physiology combine to make starvation and malnutrition a constant hazard, especially where their range is heavily populated. Worst lot of all falls to the white-tailed deer in the northern United States and Canada.

White-tailed deer are mainly browsing animals — which means their best diet is tips, twigs, and buds of bushes and trees. In winter, as the snow gets deeper, it is their habit to congregate in "deer yards," move to winter ranges, or seek sheltered areas. In a severe winter, or when too many deer try to gather in too small an area, they quickly eat all the available browse, even down to twigs as thick as pencils, as high as they can reach.

Then, crowded into a small space, they begin to starve. The smaller deer suffer worst, because only the big bucks and larger does can reach high enough in the trees for food. The fawns are first, then the smaller two and three-year-old deer. Even the survivors suffer from malnutrition. They become gaunt, lethargic, and even have difficulty running or standing. They offer a pitful picture with their bones showing awkwardly through unkempt fur.

Demand Action

At such times, people become very concerned with the welfare of "their" deer. Indeed, few who have seen the miserable animals could feel any other way. Led by hunters and nature-lovers, standing shoulder to shoulder, they storm conservation headquarters, demanding that something be done to feed the deer. If conservation agencies can't, or won't, many individuals and organizations take the matter into their own hands and feed the deer themselves.

As emotions rise, harrassed conservation agencies have been forced into artificial feeding programs, putting out alfalfa hay, corn, and other livestock feeds. Such feeding programs are very expensive and harmful to the deer in that they tend to concentrate even more around feeding areas, and around roadsides, causing a traffic hazard to themselves and motorists as well.

But feeding the deer, as almost all game managers now agree, was only treating a symptom. The real problem was and is over-population; the real solution was and is reduction of oversized deer herds by predation, hunting or some other method of population control. Even chemical sterilization and contraception have been tried, and research continues. Still, the demand for feeding has continued for decades — and the problems continued as well. One of these problems was a real mystery. Deer were found dead in yards and wintering areas, sometimes lying on a bed of hay with their stomachs full!

For years wildlife biologists puzzled over the mysteries of the starved deer with full stomachs. It took about 15 years of detective work to find the answer but now they know, and now they have their strongest argument against artificial feeding of deer.

The story is a rather long one, but worth telling in detail:

Deer are ruminants, like cows. That is, they have four compartments in their stomachs, each with a particular function. Bits of b r o w s e, grass and other herbs are swallowed, and pass in balled-up cuds into the first compartment, the rumen. There it mixes with digestive juices that contain billions of microbes—tiny plants and animals commonly called microflora and microfauna.

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Four Stomachs

The food then shifts back and forth from the rumen to the second stomach, the reticulum, mixing with the juices, then on through the other two compartments, the omasum and the abomasum. But even four stomachs could not digest the woody fibers of browse without those microorganisms. They thrive on browse, especially the hard-to-digest woody portions. In doing so, they change the woody materials into more digestible food for the deer. Even the microorganisms themselves go on through the digestive process, contributing protein to the host deer's diet.

Through deer are not born with a supply of these microorganisms, they get them from plants, soil, the air, and the mother deer. By the time they are two months old and browsing, they are well supplied. The microbes are made up of a variety of species, depending on the plants the deer eat. As a matter of fact, they are so specialized that they can only work efficiently on specific items in the deer's natural diet. Any sudden change in the deer's diet can stop their action, and mean serious trouble for the host deer.

During the winter, as the deer work harder and harder for browse, their diet becomes more and more woody. The microbes adapt to the change, though badly, and the deer may begin to suffer from malnutrition.

In that condition ,the deer will readily accept artificial foods. But the high-quality foods—hay, corn and cattle feed—usually offered in feeding programs are too much for the l i t t l e organisms inside them. When the deer's supply of microorganisms is gone, the deer can no longer digest any food and they die of starvation, in the midst of plenty, with their stomachs packed with expensive, high-quality food!

To make matters worse, another factor works against the microbes as well. When the deer's diet is of poor quality in winter, the bacteria that depend on ammonia may be low in numbers. But high-quality livestock feeds are very high in ammonia. As a result, ammonia poisoning may occur or the surplus may form urea, some of which may be obsorbed in the bloodstream, where it poisons the deer.

Difficult to Explain

The problem of informing the well-meaning public that they can feed their deer to death is an enormous one. These facts of deer nutrition are hard to explain and hard for people to understand. Yet their importance is vital, for well-meaning people may be causing more harm to deer than the natural hazards of winter.

If winter starvation and malnutrition are only symptoms, and the disease is overpopulation, what can be done to help?

Most important is population control. Natural predators can help keep deer herds in check, but there are no longer enough large predators to do the job. Game management, especially through controlled hunting, can replace natural predators to a great extent, reducing populations to healthy levels, which in turn insures that natural winter food will be enough to get the herd through until spring.

Providing more good year-around food for the deer is another approach. Several states schedule commercial timber sales on state game lands, systematically removing large trees so that more small brush and trees can grow where deer can reach them. In addition, the cutting leaves tops and tips of the trees on the ground for deer, especially if the cutting is done in the winter, when food is in short supply. In addition to timber management, habitat can be managed by p l a n t i n g good browse in the cut-over areas, to create even better wintering range. In some locations, planned fires produce the same effect.

Browse Cutting Operations

At least five states are spending time and money on a stopgap method—cutting natural browse around wintering areas to get the food within the reach of the deer. In some states, sportmen's and conservation groups rally to help with axes and chain saws on areas where permission is botained for browse cutting. One northeastern state e m p l o y s "Food and Cover Corpsmen" to cut browse for its heavy deer population. During some years, that state has spent over a half million dollars to cut browse on 10,000 or more acres. This method has the added advantage that it is an active, satisfying way to try to help.

Unfortunately, biologists point out that browse cutting to help deer is like taking aspirin for a brain tumor —it doesn't solve the big problem of overpopulation. Nor can a few hundred or thousand men with chain saws cut enough browse to help a significant number of deer.

It is a paradox that, when deer need help the most, we cannot give it to them. The help that seems the cruelest—population control—is the most merciful.

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JUDITH RIVER GAME RANGE

By Bob Varner

The Judith River Game Range is one of several areas that the Fish and Game Department manages primarily as elk winter range. This area lies near Utica in Central Montana and totals slightly over 6,000 acres. Most of the land is owned by the commission, but about 1,100 acres are leased or withdrawn from federal lands. This game range has been a stabilizing factor in the management of the Little Belts elk and provides winter forage for the largest segment of the Little Belts elk herd.

Brome grass areas (darker vegetation) on the Judith Game Range. Such areas are in need of reseeding.

The biggest part of this range had been overgrazed by livestock for several years and was in poor condition when acquired by the Montana Fish and Game Commission. Much of the depleted native range has responded to good management and is now producing large amounts of quality forage. However, approximately 2,000 acres is contributing very little elk forage. Eight hundred acres of native range were so denuded that most of the desirable plants were removed and the range has not recovered even after 10 to 15 years of very light use.

Extensive areas of abandoned cropland make up the balance of this undesirable range. The lands were plowed by ranchers around 1920 in short-lived attempts to raise field crops, and then seeded to exotic grasses to provide spring grazing and hay for livestock. These fields of smooth brome and crested wheatgrass are not used by elk, even during severe winters. Some of the fields have been continuously in bromegrass for 50 years and show almost no invasion by native grasses. Returning these areas to their productive potential through plant succession would require 20 to 25 years or longer. Eventual restoration and the establishment of grasses palatable to elk will reduce the use on surrounding native grassland ranges and the overall carrying capacity will be increased.

Many studies have been completed and much has been written on rehabilitating ranges for livestock use. In most cases, the requirements of big game animals have not been considered. Livestock grazing can be controlled and use regulated to the season when non-native grasses are palatable. Free-ranging big game animals graze only the plants that are attractive to them and would completely destroy native vegetation before forced to use the less desirable plants.

Studies have been carried out to determine the most practical methods for restoring these areas to optimum value for elk. Several methods of seedbed preparation, seeding and survival and palatibility of the seeded grasses to elk have been evaluated. Removal of existing vegetation was the first problem encountered in restoration. Brome grass is very persistent and difficult to kill due to its rhizomes, underground stems which take root and continue to grow unless exposed to the air and sunlight. The most satisfactory results were obtained by using a spring shank tool bar in the early spring. After plowing, two years of summer-fallow with cultivator and rod weeder were necessary to eliminate competing plants. The preparatory crop method was used during the third season. This method involved growing and harvesting a cereal grain crop. The harvesting was done by elk and deer. Turkeys, sharptailed grouse and Hungarian partridge also utilized the grain. This practice had many advantages, including; elimination of one year's cultivation, an opportunity to determine the effectiveness of removing

This is a portion of the Judith Game Range which has been reseeded. Note the excellent foreground vegetation.

competing plants, reduction of the chance of wind erosion and provision of a firm seedbed.

Planned burning is useful for removing heavy stands of vegetation from areas to be plowed. It eliminates the plugging of equipment with litter and destroys some undesirable seeds. Burning, however, does invite wind erosion and deprives the soil of needed organic material.

The best seedbeds had deep firm soil with one or two inches of loose fine-textured top soil. Spring seeding with a grain drill equipped with depth bands and packer wheels gave the best results. Only seeds of the highest quality should be used. For native species, seed harvested locally or from areas having similar climate are expected to give the best results. Eleven species of grass were seeded. All but two are established and producing good stands. No non-native plants were found attractive to elk. The palatibility of the test-seeded grasses was determined by feeding site examinations during the winter when elk were using the areas. The results of these examinations show in order of preference to all elk as follows; big bluegrass, Idaho fescue, green needlegrass, bluebunch wheatgrass and western wheatgrass. These species are all native to the area and will be used in the restoration of the ranges.

Rehabilitation of the severely overused, unproductive native range is also planned. The choice of remedial measure depends on the degree of forage and depletion. Mechanical treatment and fertilization have been used to successfully restore many ranges to production in a comparatively short time.

Range interseeding is also useful. This method consists of opening eight to twelve inch furrows in the sod approximately forty inches apart and seeding native grasses in the furrows. Furrows placed on the contour retain and store runoff, prevent further soil loss and stimulate plant growth. The method is best used on depleted ranges where a natural seed source is no longer present.

Range pitting is used on deep soil sites where a seed source is present, an eccentric disc is used to construct pits which are seperated by undisturbed sod. The small depressions hold a considerable amount of water which stimulates forage growth. The sod from the pit also causes an increase in nitrogen through the decay of the overturned vegetation.

Fertilizer is one of the few methods of improving steep slopes and eroded soils. Tests on the game range have shown that 300 pounds of 0-33.5-0 nitrogen per acre will give the best results there. Fertilizer must be used with caution as it increases the attractiveness of these sites. Overutilization of these areas would probably cause further deteroration.

These artificial methods are not substitutes for proper range management. Returning the range lands to desirable vegetation is an expensive undertaking and every effort must be made to maintain and improve native plants presently on Game Ranges. Seeding of non-native species may in a few cases supplement but will probably never replace native grasses for big game.

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